

University of Groningen

How to swim with sharks?

Yan, Yan

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Publisher's PDF, also known as Version of record

Publication date:

2018

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Yan, Y. (2018). *How to swim with sharks? The antecedents and consequences of coopetition*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen, SOM research school.

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

APPENDIX A

To test the right and left shift of the turning point of the inverted U curve when CN and TN

small-word Q is high, we assessed whether the value $\frac{\delta X^*}{\delta M}$ as a whole is significantly different

from zero and used “nlcom” command recommended by Haans et al. (2016). According to their

paper, if $Y = \beta_0 + \beta_1 + \beta_2 X^2 + \beta_3 XM + \beta_4 X^2 M + \beta_5 M$, then

$$\frac{\delta X^*}{\delta M} = \frac{\beta_1 \beta_4 - \beta_2 \beta_3}{2(\beta_2 + \beta_4 M)^2} \text{ (here, } M \text{ refers to the moderating variable). We found that the turning}$$

point of the inverted U relationship between the direct coopetition network and knowledge

recombinant capabilities significantly moves left or right when CNQ or TNQ is high (CNQ: $z =$

2.05, $p < 0.05$; TNQ: $z = -2.18$, $p < 0.05$). Furthermore, we tested the up and down shift of the

turning point. Since Haans et al. (2016) did not provide the test, we derive a formula as follows:

$$Y = \beta_0 + \beta_1 + \beta_2 X^2 + \beta_3 XM + \beta_4 X^2 M + \beta_5 M$$

$$Y = (\beta_2 + \beta_4 M) X^2 + (\beta_1 + \beta_3 M) X + (\beta_0 + \beta_5)$$

$$\begin{aligned} \frac{\delta Y^*}{\delta M} &= \beta_5 - \left(\frac{(\beta_1 + \beta_3 M)^2}{4(\beta_2 + \beta_4 M)} \right) \\ &= \beta_5 - \frac{8\beta_3(\beta_1 + \beta_3 M)(\beta_2 + \beta_4 M) - 4\beta_4(\beta_1 + \beta_3 M)^2}{16(\beta_2 + \beta_4 M)^2} \\ &= \beta_5 - \frac{(\beta_1 + \beta_3 M)(2\beta_2\beta_3 + \beta_3\beta_4 M - \beta_1\beta_4)}{4(\beta_2 + \beta_4 M)^2} \end{aligned}$$

Using this method, we found that the up or down shift of the turning point are miniscule

(CNQ: $z = -1.30$, $p > 0.1$; TNQ: $z = 0.04$; $p > 0.1$).

APPENDIX B

Knowledge recombinant capability

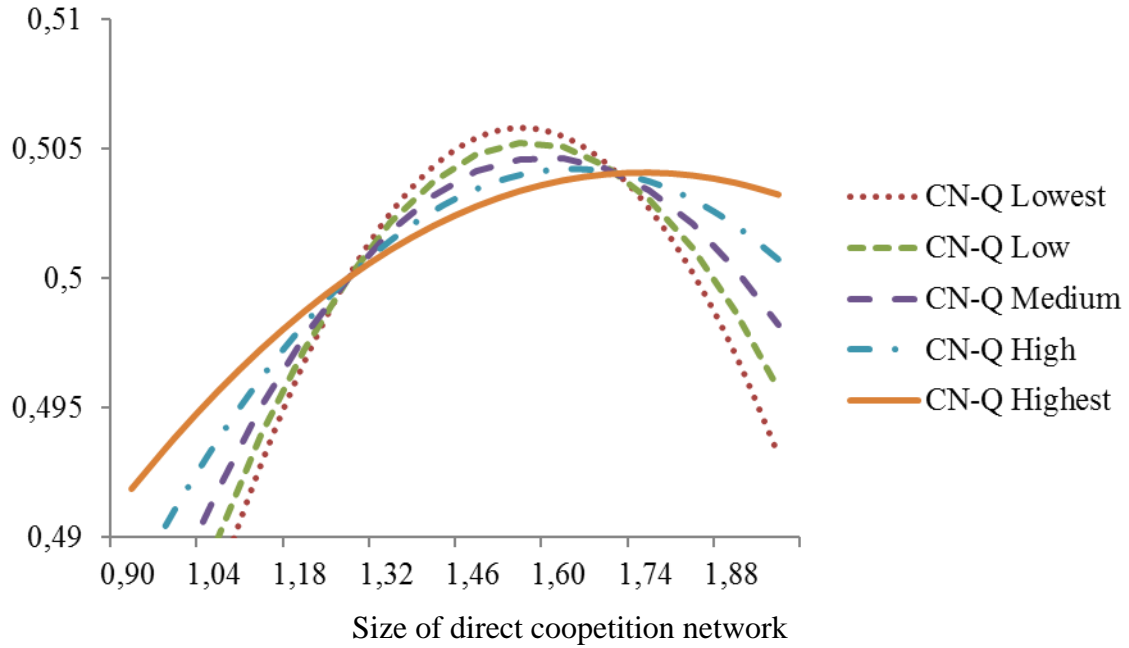


Figure B1. Interaction Plot of the Direct Coopetition Network and Internal CN_Q

Knowledge recombinant capability

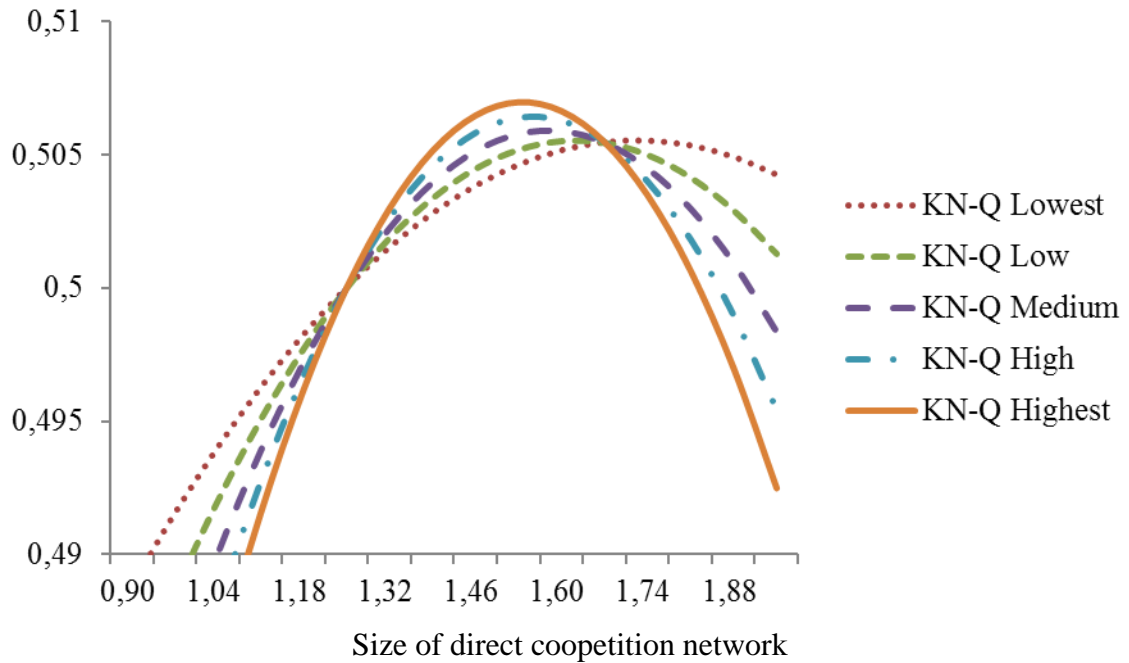


Figure B2. Interaction Plot of the Direct Coopetition Network and Internal TN_Q